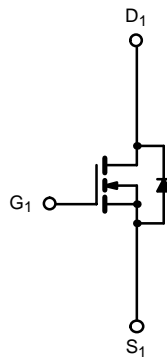
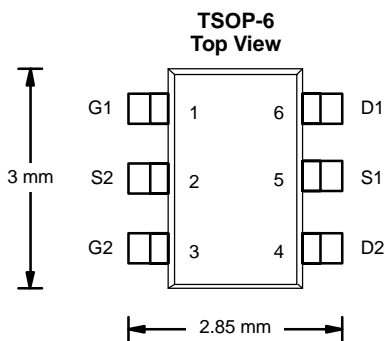




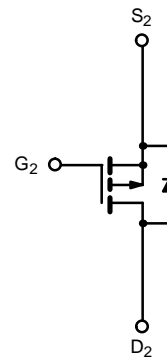
## N- and P-Channel 20-V (D-S) MOSFET

PRODUCT SUMMARY			
	$V_{DS}$ (V)	$r_{DS(on)}$ ( $\Omega$ )	$I_D$ (A)
N-Channel	20	0.125 @ $V_{GS} = 4.5$ V	2.4
		0.200 @ $V_{GS} = 2.5$ V	1.8
P-Channel	-20	0.200 @ $V_{GS} = -4.5$ V	-1.8
		0.340 @ $V_{GS} = -2.5$ V	-1.2

**TrenchFET®**  
Power MOSFETS



N-Channel MOSFET



P-Channel MOSFET

ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED)							
Parameter	Symbol	N-Channel		P-Channel		Unit	
		10 secs	Steady State	10 secs	Steady State		
Drain-Source Voltage	$V_{DS}$	20		-20		V	
Gate-Source Voltage	$V_{GS}$	$\pm 12$		$\pm 12$			
Continuous Drain Current ( $T_J = 150^\circ\text{C}$ ) <sup>a</sup>	$I_D$	$T_A = 25^\circ\text{C}$	2.4	2.0	-1.8	-1.5	A
		$T_A = 70^\circ\text{C}$	1.7	1.4	-1.3	-1.2	
Pulsed Drain Current	$I_{DM}$	8		-7			
Continuous Source Current (Diode Conduction) <sup>a</sup>	$I_S$	1.05	0.75	-1.05	-0.75		
Maximum Power Dissipation <sup>a</sup>	$P_D$	$T_A = 25^\circ\text{C}$	1.15	0.83	1.15	0.83	W
		$T_A = 70^\circ\text{C}$	0.59	0.53	0.59	0.53	
Operating Junction and Storage Temperature Range	$T_J, T_{stg}$	-55 to 150				$^\circ\text{C}$	

THERMAL RESISTANCE RATINGS							
Parameter	Symbol	N-Channel		P-Channel		Unit	
		Typ	Max	Typ	Max		
Maximum Junction-to-Ambient <sup>a</sup>	$R_{thJA}$	$t \leq 10$ sec	93	110	93	110	$^\circ\text{C/W}$
		Steady State	130	150	130	150	
Maximum Junction-to-Foot (Drain)	$R_{thJF}$	75	90	75	90		

Notes  
a. Surface Mounted on 1" x 1" FR4 Board.

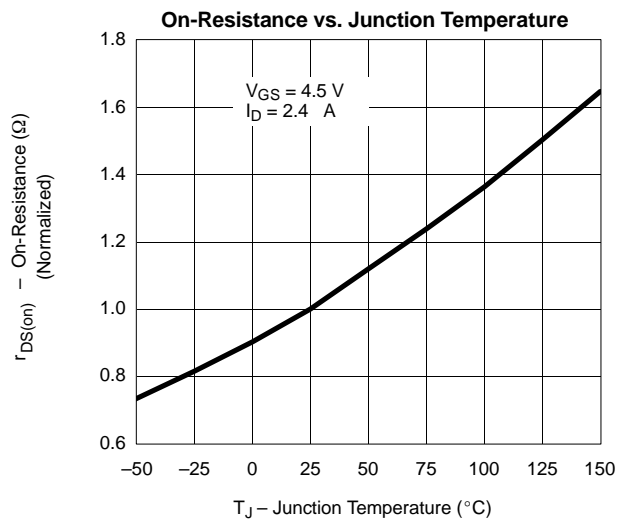
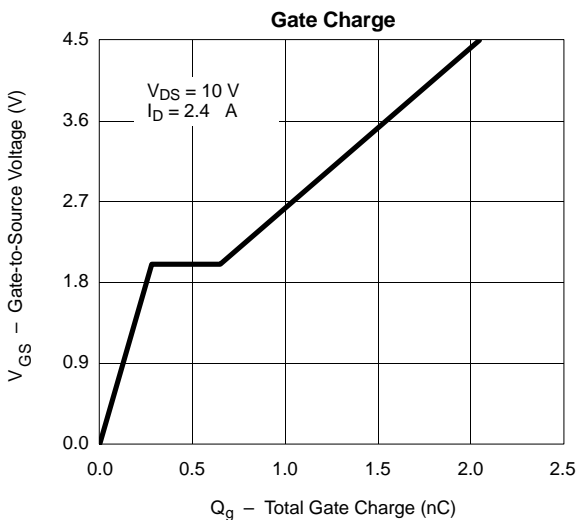
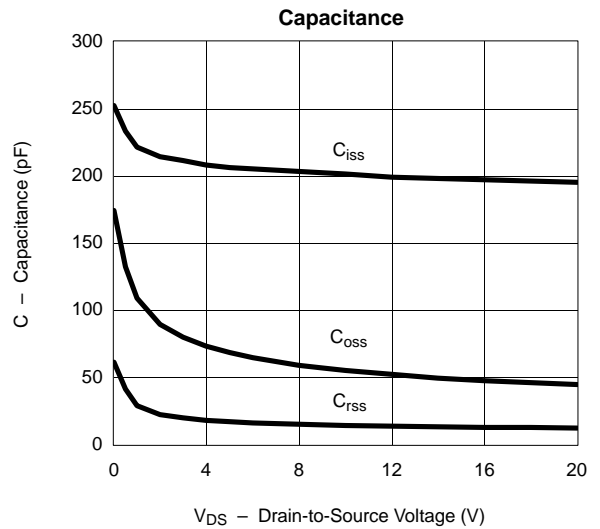
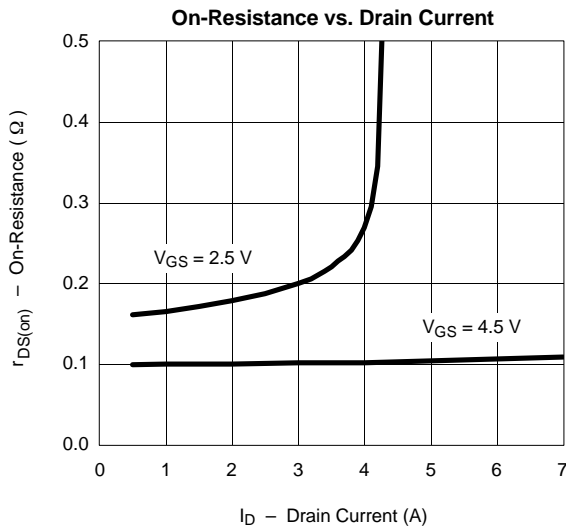
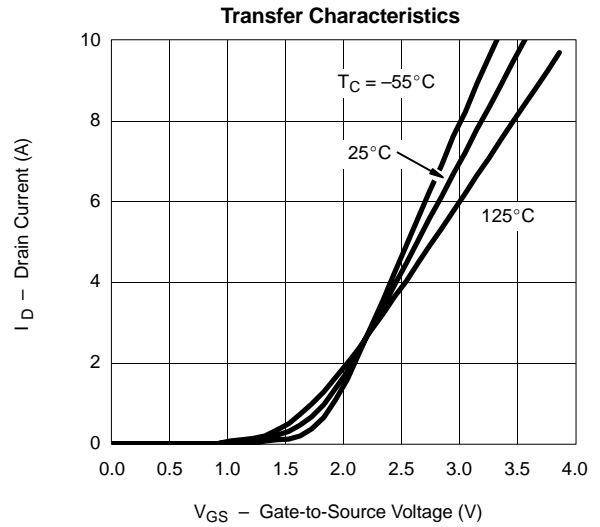
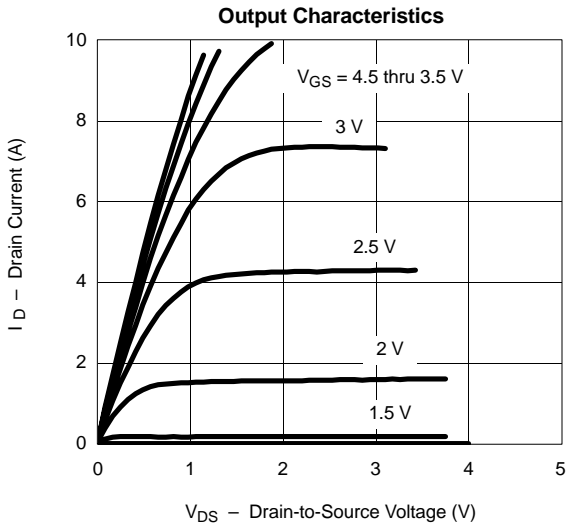
SPECIFICATIONS (T <sub>J</sub> = 25 °C UNLESS OTHERWISE NOTED)							
Parameter	Symbol	Test Condition		Min	Typ	Max	Unit
<b>Static</b>							
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 250 μA	N-Ch	0.6			V
		V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = -250 μA	P-Ch	-0.5			
Gate-Body Leakage	I <sub>GSS</sub>	V <sub>DS</sub> = 0 V, V <sub>GS</sub> = ±12 V	N-Ch			±100	nA
			P-Ch			±100	
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> = 16 V, V <sub>GS</sub> = 0 V	N-Ch			1	μA
		V <sub>DS</sub> = -16 V, V <sub>GS</sub> = 0 V	P-Ch			-1	
		V <sub>DS</sub> = 16 V, V <sub>GS</sub> = 0 V, T <sub>J</sub> = 55 °C	N-Ch			5	
		V <sub>DS</sub> = -16 V, V <sub>GS</sub> = 0 V, T <sub>J</sub> = 55 °C	P-Ch			-5	
On-State Drain Current <sup>a</sup>	I <sub>D(on)</sub>	V <sub>DS</sub> ≥ 5 V, V <sub>GS</sub> = 4.5 V	N-Ch	5			A
		V <sub>DS</sub> ≤ -5 V, V <sub>GS</sub> = -4.5 V	P-Ch	-5			
Drain-Source On-State Resistance <sup>a</sup>	r <sub>DS(on)</sub>	V <sub>GS</sub> = 4.5 V, I <sub>D</sub> = 2.4 A	N-Ch		0.100	0.125	Ω
		V <sub>GS</sub> = -4.5 V, I <sub>D</sub> = -1.8 A	P-Ch		0.160	0.200	
		V <sub>GS</sub> = 2.5 V, I <sub>D</sub> = 1.8 A	N-Ch		0.160	0.200	
		V <sub>GS</sub> = -2.5 V, I <sub>D</sub> = -1.2 A	P-Ch		0.280	0.340	
Forward Transconductance <sup>a</sup>	g <sub>fs</sub>	V <sub>DS</sub> = 5 V, I <sub>D</sub> = 2.4 A	N-Ch		5		S
		V <sub>DS</sub> = -5 V, I <sub>D</sub> = -1.8 A	P-Ch		3.6		
Diode Forward Voltage <sup>a</sup>	V <sub>SD</sub>	I <sub>S</sub> = 1.05 A, V <sub>GS</sub> = 0 V	N-Ch		0.80	1.10	V
		I <sub>S</sub> = -1.05 A, V <sub>GS</sub> = 0 V	P-Ch		-0.83	-1.10	
<b>Dynamic<sup>b</sup></b>							
Total Gate Charge	Q <sub>g</sub>	<b>N-Channel</b> V <sub>DS</sub> = 10 V, V <sub>GS</sub> = 4.5 V, I <sub>D</sub> = 2.4 A <b>P-Channel</b> V <sub>DS</sub> = -10 V, V <sub>GS</sub> = -4.5 V, I <sub>D</sub> = -1.8 A	N-Ch		2.1	3.2	nC
			P-Ch		2.7	4.0	
Gate-Source Charge	Q <sub>gs</sub>		N-Ch		0.3		
			P-Ch		0.4		
Gate-Drain Charge	Q <sub>gd</sub>		N-Ch		0.4		
			P-Ch		0.6		
Turn-On Delay Time	t <sub>d(on)</sub>	<b>N-Channel</b> V <sub>DD</sub> = 10 V, R <sub>L</sub> = 10 Ω I <sub>D</sub> ≅ 1 A, V <sub>GEN</sub> = 4.5 V, R <sub>G</sub> = 6 Ω <b>P-Channel</b> V <sub>DD</sub> = -10 V, R <sub>L</sub> = 10 Ω I <sub>D</sub> ≅ -1 A, V <sub>GEN</sub> = -4.5 V, R <sub>G</sub> = 6 Ω	N-Ch		10	17	ns
			P-Ch		11	17	
Rise Time	t <sub>r</sub>		N-Ch		30	50	
			P-Ch		34	50	
Turn-Off Delay Time	t <sub>d(off)</sub>		N-Ch		14	25	
			P-Ch		19	30	
Fall Time	t <sub>f</sub>		N-Ch		6	12	
			P-Ch		24	36	
Source-Drain Reverse Recovery Time	t <sub>rr</sub>	I <sub>F</sub> = 1.05 A, di/dt = 100 A/μs	N-Ch		30	50	
		I <sub>F</sub> = -1.05 A, di/dt = 100 A/μs	P-Ch		20	40	

## Notes

- a. Pulse test; pulse width ≤ 300 μs, duty cycle ≤ 2%.  
b. Guaranteed by design, not subject to production testing.

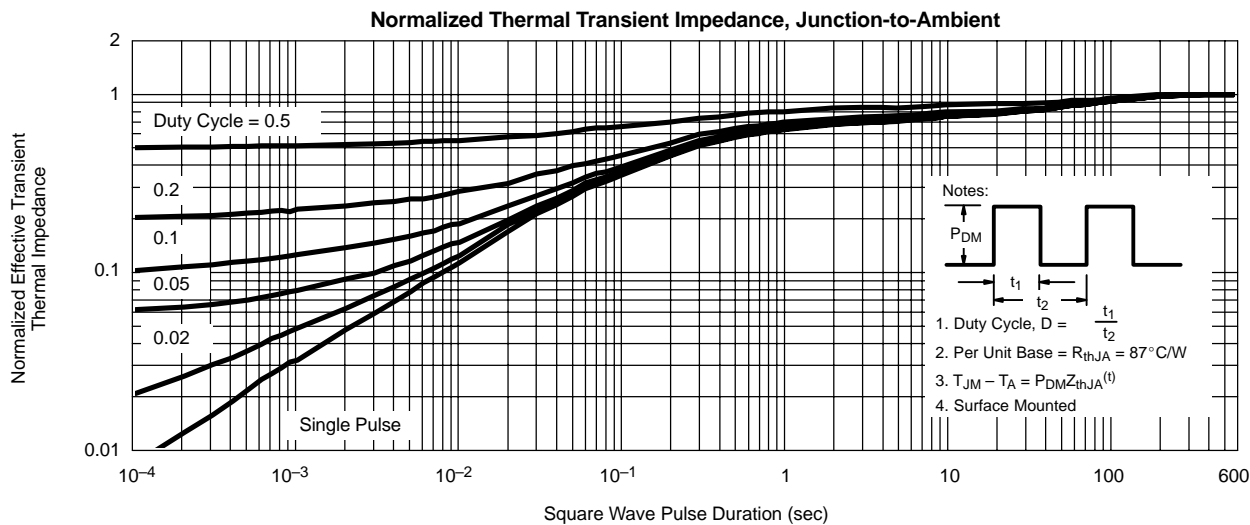
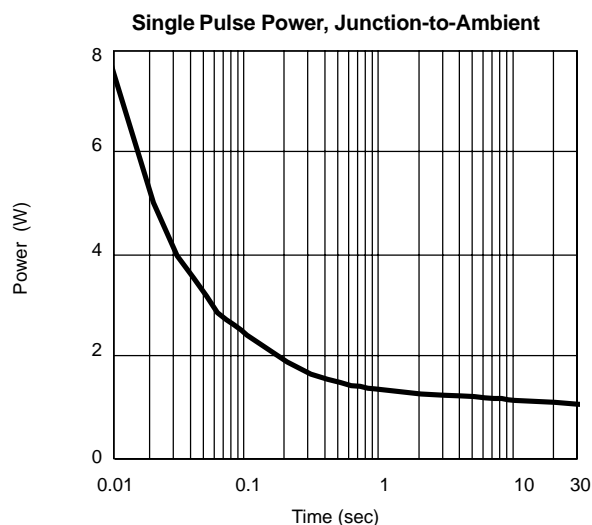
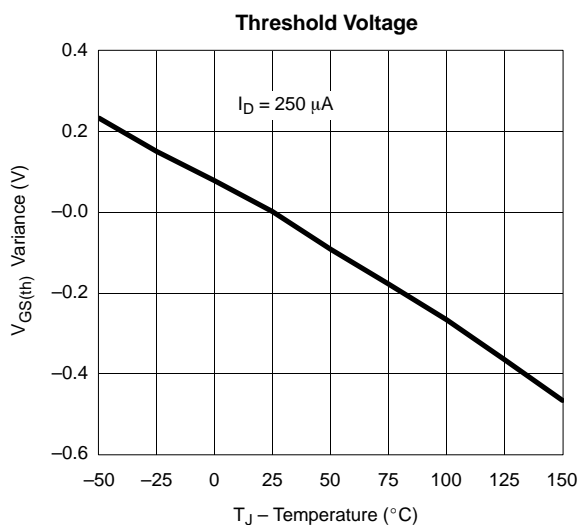
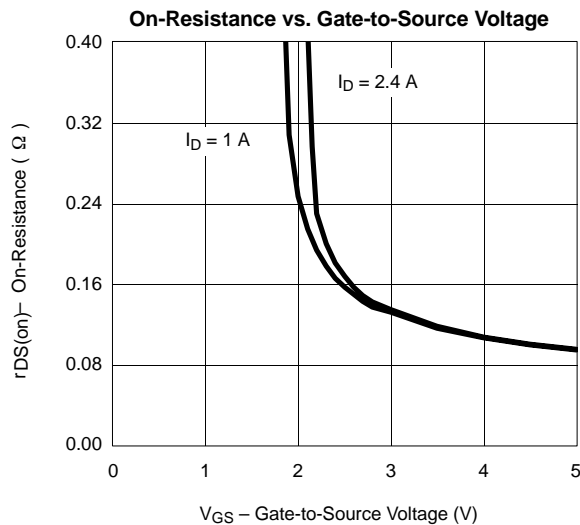
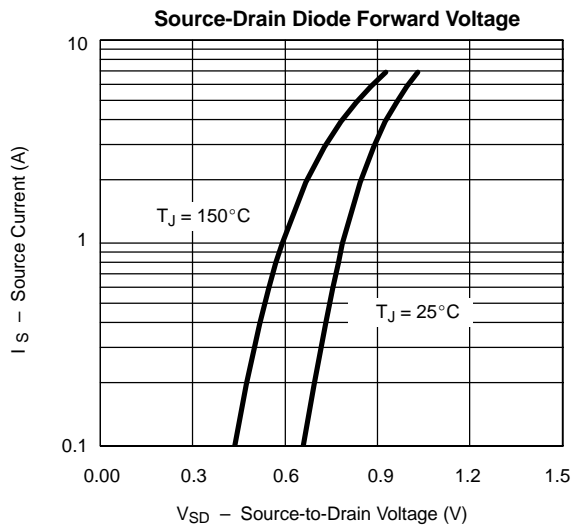


**TYPICAL CHARACTERISTICS (25°C UNLESS NOTED) N-CHANNEL**



**TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)**

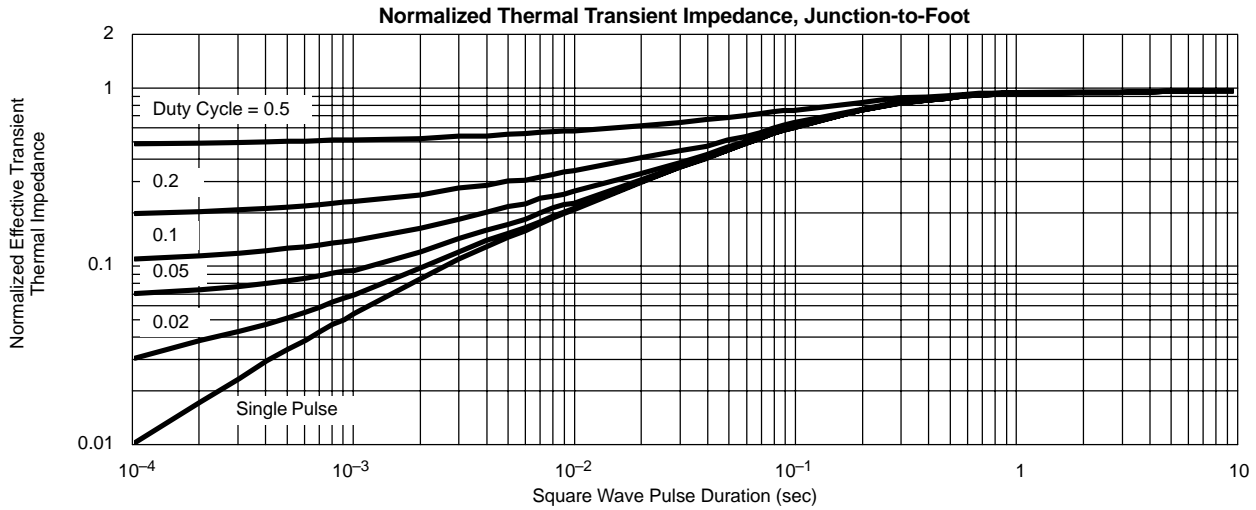
**N-CHANNEL**





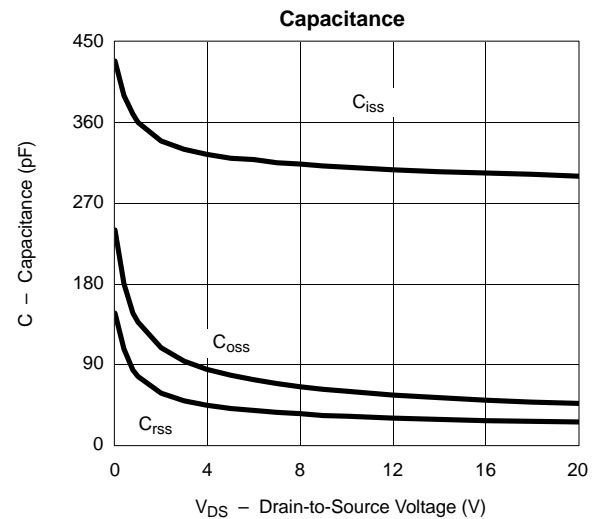
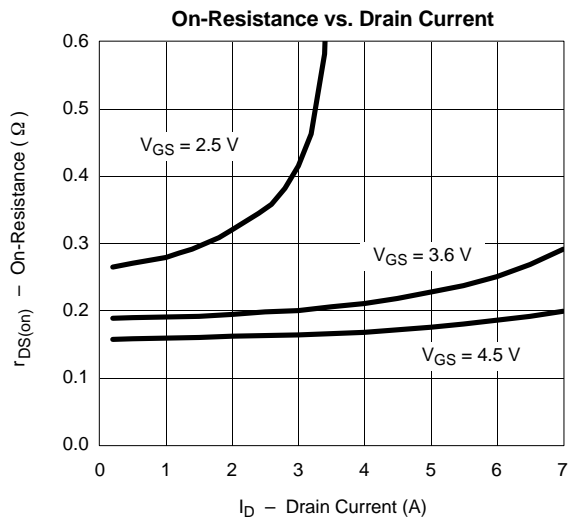
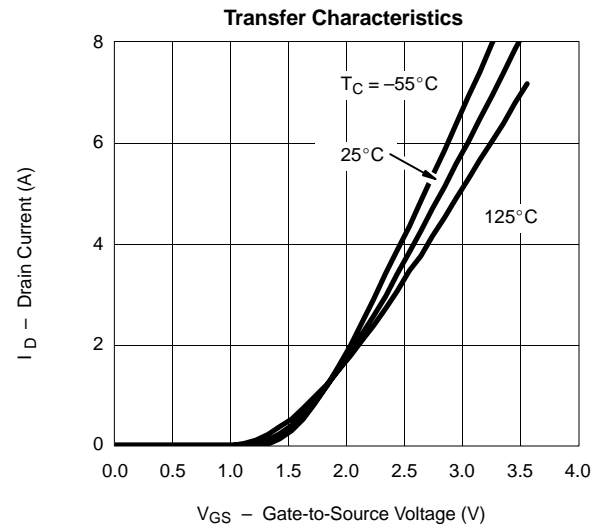
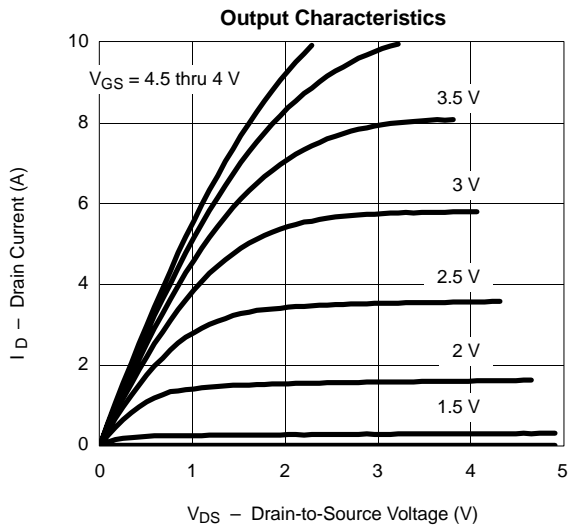
**TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)**

**N-CHANNEL**



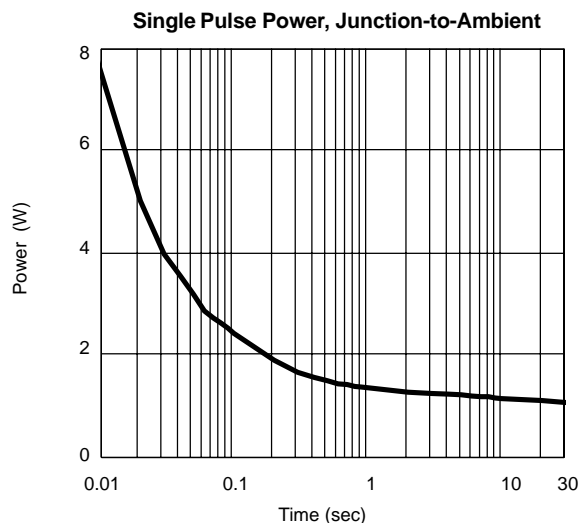
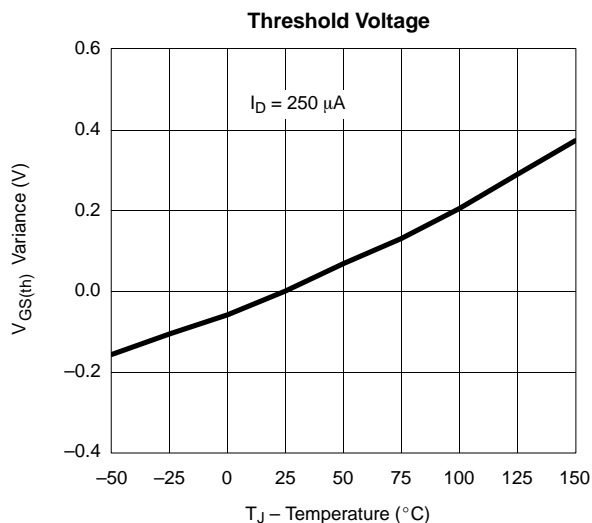
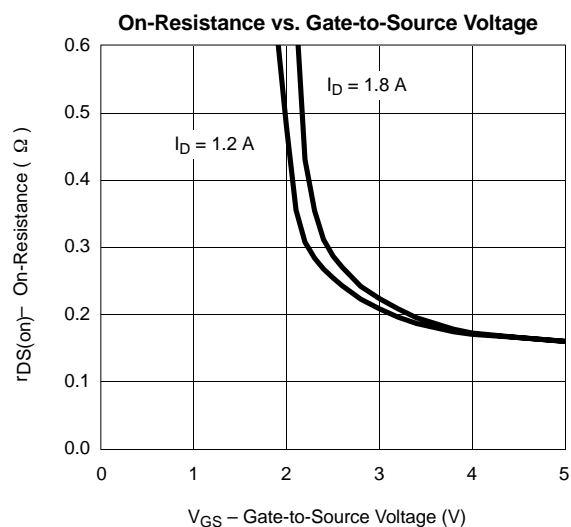
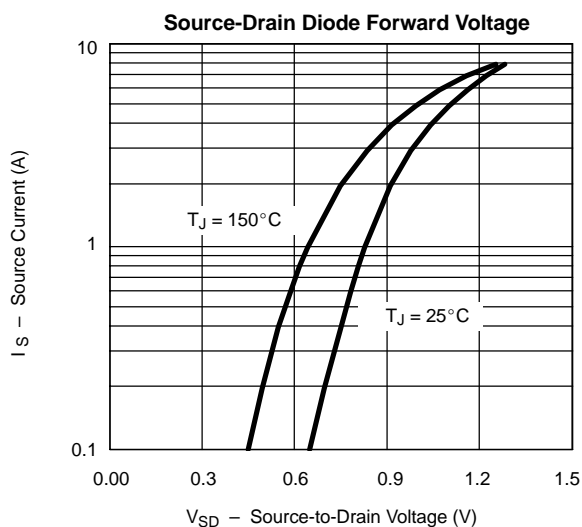
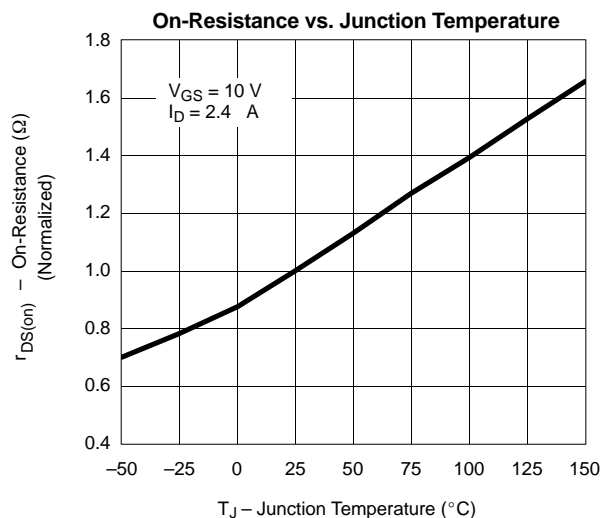
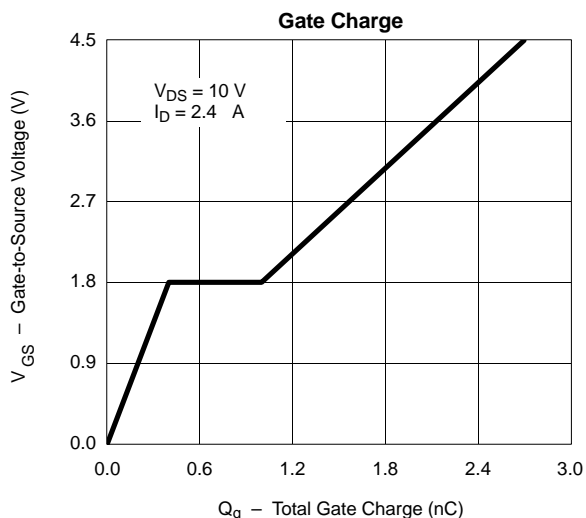
**TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)**

**P-CHANNEL**



**TYPICAL CHARACTERISTICS (25 °C UNLESS NOTED)**

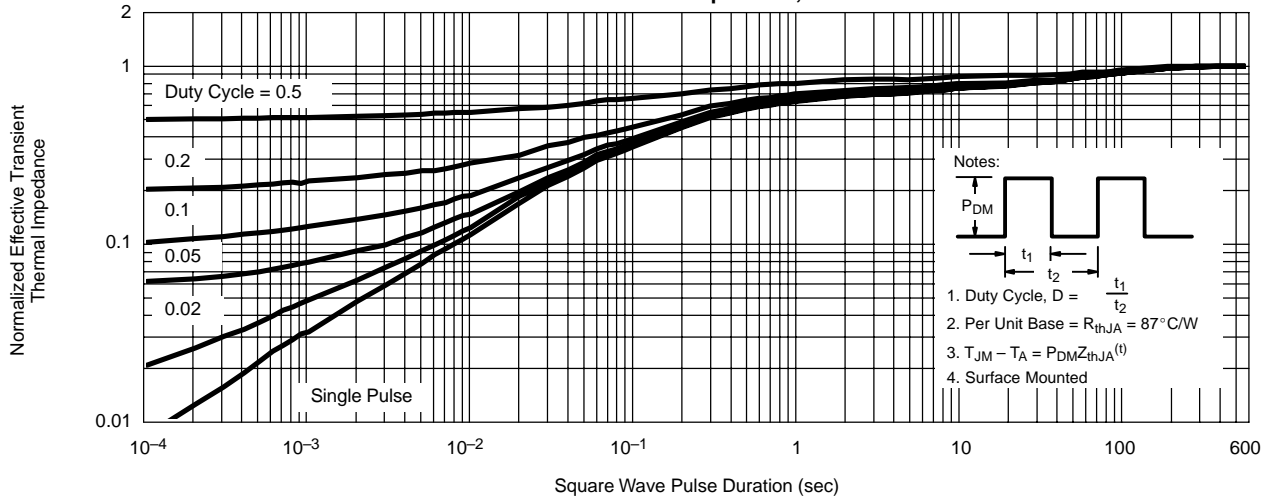
**P-CHANNEL**



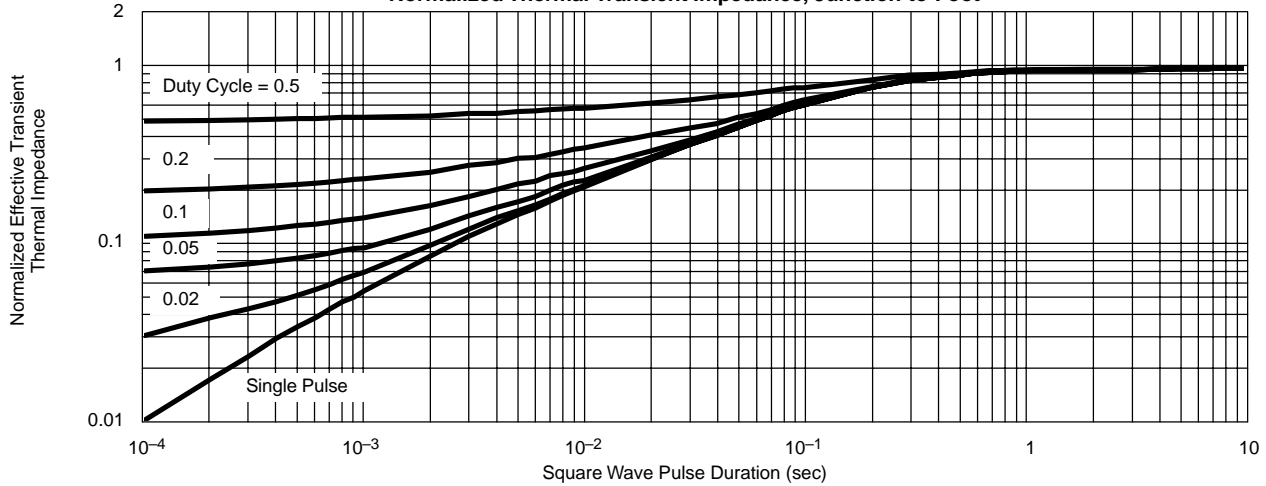


**TYPICAL CHARACTERISTICS (25 °C UNLESS NOTED) P-CHANNEL**

Normalized Thermal Transient Impedance, Junction-to-Ambient



Normalized Thermal Transient Impedance, Junction-to-Foot





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